

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
12 September 2003 (12.09.2003)

PCT

(10) International Publication Number  
**WO 2003/074078 A3**

(51) International Patent Classification<sup>7</sup>: **A61K 38/44**,  
48/00, C12N 15/53, 9/02, A01K 67/027, C12N 5/10

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(21) International Application Number:  
PCT/EP2003/002363

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US,  
UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 7 March 2003 (07.03.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
02 005 141.3 7 March 2002 (07.03.2002) EP

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(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) *for US only*

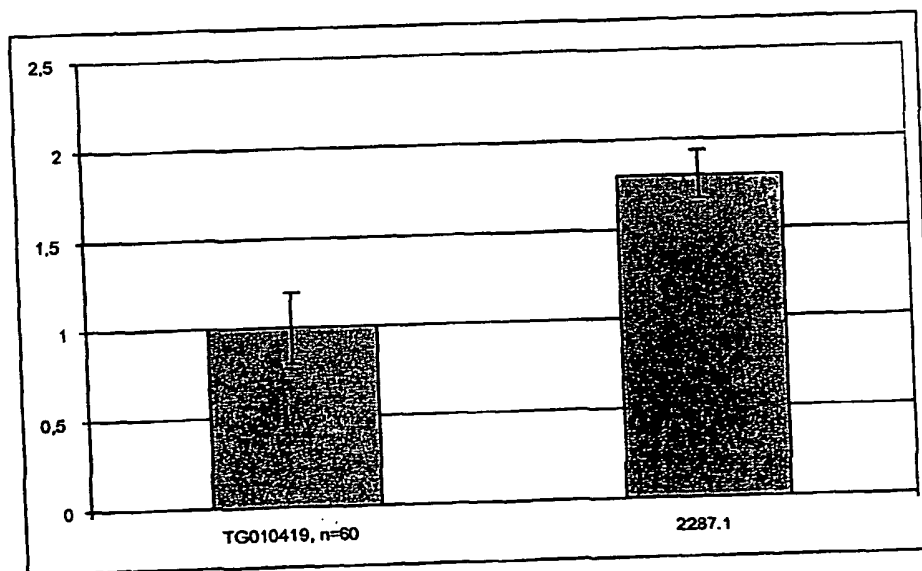
Published:

— with international search report

[Continued on next page]

(54) Title: CG3842 HOMOLOGOUS PROTEINS INVOLVED IN THE REGULATION OF ENERGY HOMEOSTASIS

### Triglyceride content of a CG3842 mutant



(57) Abstract: The present invention discloses CG3842 or SCAD homologous proteins regulating the energy homeostasis and the metabolism of triglycerides, and polynucleotides, which identify and encode the proteins disclosed in this invention. The invention also relates to the use of these sequences in the diagnosis, study, prevention, and treatment of metabolic diseases and disorders.



**(88) Date of publication of the international search report:**  
1 April 2004

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/02363

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K38/44 A61K48/00 C12N15/53 C12N9/02 A01K67/027  
C12N5/10

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, EMBL, CHEM ABS Data, BIOSIS, MEDLINE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01 90334 A (INCYTE GENOMICS INC) 29 November 2001 (2001-11-29) the whole document	1-27
X	LIN BIAOYANG ET AL: "Prostate short-chain dehydrogenase reductase 1 (PSDR1): A new member of the short-chain steroid dehydrogenase/reductase family highly expressed in normal and neoplastic prostate epithelium" CANCER RESEARCH, AMERICAN ASSOCIATION FOR CANCER RESEARCH, BALTIMORE, MD, US, vol. 61, no. 4, 15 February 2001 (2001-02-15), pages 1611-1618, XP002237372 ISSN: 0008-5472 cited in the application the whole document	1-27

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
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Date of the actual completion of the international search

7 October 2003

Date of mailing of the international search report

21. 11. 03

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/02363

**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01 44448 A (INCYTE GENOMICS INC ;AZIMZAI YALDA (US); YUE HENRY (US); BAUGHN MA) 21 June 2001 (2001-06-21) the whole document	1-27
X	----- DATABASE EMBL 'Online! 1 December 2001 (2001-12-01) retrieved from EBI, accession no. Q96NR8 Database accession no. Q96NR8 XP002248942 abstract	1-27
X	----- DATABASE EMBL 'Online! 1 June 2001 (2001-06-01) retrieved from EBI, accession no. Q9D1Y4 Database accession no. Q9D1Y4 XP002248943 abstract & KAWAI J. ET AL: NATURE, vol. 409, pages 685-690,	1-27
X	----- DATABASE EMBL 'Online! 31 October 2001 (2001-10-31) retrieved from EBI, accession no. AK054835 Database accession no. AK054835 XP002248944 abstract	1-27
X	----- LAI CHUN-HUNG ET AL: "Identification of novel human genes evolutionarily conserved in Caenorhabditis elegans by comparative proteomics" GENOME RESEARCH, COLD SPRING HARBOR LABORATORY PRESS, US, vol. 10, no. 5, May 2000 (2000-05), pages 703-713, XP002201533 ISSN: 1088-9051 cited in the application the whole document	1-27
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A	----- ADAMS M D ET AL: "THE GENOME SEQUENCE OF DROSOPHILA MELANOGASTER" SCIENCE, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,, US, vol. 287, no. 5461, 24 March 2000 (2000-03-24), pages 2185-2195, XP000961051 ISSN: 0036-8075 the whole document	1-27
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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/02363

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	<p>DATABASE NCBI 'Online! 14 February 2003 (2003-02-14) retrieved from NCBI, accession no. AE003437 Database accession no. AE003437 XP002248945 abstract &amp; ADAMS M D ET AL: "THE GENOME SEQUENCE OF DROSOPHILA MELANOGASTER" SCIENCE, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,, US, vol. 287, no. 5461, 24 March 2000 (2000-03-24), pages 2185-2195, XP000961051</p>	1-27
P,X	<p>DATABASE FLYBASE GADFLY 'Online! Annotation of gene CG3842, 1 January 2003 (2003-01-01) retrieved from FLYBASE, accession no. FBgn0029866 Database accession no. FBgn0029866 XP002248946 abstract</p>	1-27
T	<p>DATABASE FLYBASE 'Online! Flybase Report, Synopsis of gene CG3842, 30 June 2003 (2003-06-30) retrieved from FLYBASE, accession no. FBgn0029866 Database accession no. FBgn0029866 XP002248947 abstract</p>	1-27
E	<p>EP 1 293 569 A (RES ASS FOR BIOTECHNOLOGY ;HELIX RES INST (JP)) 19 March 2003 (2003-03-19) The whole document, in particular sequence 1760 which is 100% identical to SEQ ID NO: 2 of the present application</p>	1-27
P,X	<p>DATABASE EMBL 'Online! 20 January 2003 (2003-01-20) retrieved from EBI Database accession no. ABP69268 XP002256876 abstract</p>	1-27
P,X	<p>&amp; WO 02 70539 A ((HYSE-) HYSEQ INC.) 12 September 2002 (2002-09-12) The whole document, see in particular SEQ ID NO: 1315</p>	1-27

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/02363

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	<p>HAESELEER FRANCOISE ET AL:            "Dual-substrate specificity short chain            retinol dehydrogenases from the vertebrate            retina."            JOURNAL OF BIOLOGICAL CHEMISTRY,            vol. 277, no. 47,            22 November 2002 (2002-11-22), pages            45537-45546, XP002256875            ISSN: 0021-9258            the whole document</p>	1-27

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 03/02363

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1-27  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:  
1-27 (all partially)
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-27 (all partially)

Compositions, methods and uses involving a nucleic acid encoding a Drosophila protein (GadFly Accession Number CG3842).

2. Claims: 1-27 (partially)

Compositions, methods and uses involving SEQ ID NOs: 1 and 2 of the present application.

3. Claims: 1-27 (partially)

Compositions, methods and uses involving SEQ ID NOs: 3 and 4 of the present application.

4. Claims: 1-27 (partially)

Compositions, methods and uses involving a human PAN2 protein.



## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1-27

Present claims 1-27 relate to an extremely large number of possible compounds (and uses thereof). In fact, the claims contain so many options, variables, possible permutations and provisos that a lack of clarity (and/or conciseness) within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Not only nucleic acid molecules of the short-chain dehydrogenase (SCAD) gene family are claimed, or SCAD homologous polypeptides (both terms being vague and undefined, rendering all claims referring to them unclear), but the claims refer also to fragments or variants of undefined nature, effectors, antibodies, aptamers, receptors recognizing a nucleic acid molecule of the SCAD family or said polypeptide encoded thereby.

The claims cover all products having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such products. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the product by reference to a result to be achieved (i.e. being an effector, or receptor of another molecule). Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for the particular proteins mentioned in claim 2, and uses thereof.

Furthermore, on claim 2 reference is made to four different proteins which are not unitarily linked (see lack of unity section). The first of these molecules is a nucleic acid encoding a *Drosophila* protein characterized by the *GadFly* Accession Number CG3842. There is no sequence in the application as filed for said *Drosophila* protein, being the Accession number the only identification. Such a definition is unclear, thus contravening the requirements of Article 6 PCT. Nucleic acid or protein molecules must be unequivocally characterized by their nucleotide or amino acid sequences.

Furthermore, the lack of sequence for the *Drosophila* protein results in a lack of support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for all subject-matter relating to said *Drosophila* protein. Thus, a meaningful search over the whole of the claimed scope is impossible.

Thus, the search has been restricted to the particular SEQ ID NOs: 1 to 4 of the present application, to the *GadFly* Accession number CG3842, and also to the phenotypic effects shown in the mutant of the present application, i.e., increased triglyceride levels in *Drosophila* mutants.

The applicant's attention is drawn to the fact that claims, or parts of

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/02363

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0190334	A	29-11-2001	AU 7498101 A CA 2429199 A1 EP 1290180 A2 WO 0190334 A2	03-12-2001 29-11-2001 12-03-2003 29-11-2001
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WO 0196371	A	20-12-2001	AU 8574301 A WO 0196371 A2	24-12-2001 20-12-2001
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